



**Recommendations for the Use of Antiretroviral Drugs in  
Pregnant Women with HIV Infection and Interventions to Reduce  
Perinatal HIV Transmission in the United States**

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# Maternal HIV Testing and Identification of Perinatal HIV Exposure (Last updated November 14, 2017; last reviewed November 14, 2017)

## Panel's Recommendations

- HIV testing is recommended as standard of care for all sexually active women, and should be a routine component of preconception care (AII).
- All pregnant HIV-negative women in the United States should be tested as early as possible during each pregnancy (AII).
- Repeat HIV testing in the third trimester is recommended for pregnant women with initial negative HIV antibody tests who are known to be at risk of acquiring HIV, who are receiving care in facilities that have an HIV incidence in pregnant women of at least 1 per 1,000 per year, who are incarcerated, or who reside in jurisdictions with elevated HIV incidence (see [Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings](#) and <http://www.cdc.gov/hiv/pdf/HIVtestingAlgorithmRecommendation-Final.pdf>) (AII).
- Expedited HIV testing at the time of labor or delivery should be performed for any woman with undocumented HIV status; testing should be available 24 hours a day, and results available within 1 hour (AII). If results are positive, intrapartum and infant postnatal antiretroviral (ARV) drug prophylaxis should be initiated immediately, pending results of supplemental HIV testing (AII) see [Perinatal Guidelines](#) for guidance.
- Women who have not been tested for HIV before or during labor should undergo expedited HIV antibody testing during the immediate postpartum period (or their newborns should undergo expedited HIV antibody testing) (AII). If results in mother or infant are positive, an appropriate infant antiretroviral (ARV) drug regimen should be initiated immediately, and the mothers should not breastfeed unless supplemental HIV testing is negative (AII). Infants with initial positive HIV viral tests (RNA, DNA) should have their ARV regimen modified, if necessary, to a three-drug combination of ARV drugs at treatment dosages (antiretroviral therapy) (see [Antiretroviral Management of Exposed Infants](#)) (AII).
- Results of maternal HIV testing should be documented in the newborn's medical record and communicated to the newborn's primary care provider (AIII).
- HIV testing to determine HIV status is recommended for infants and children in foster care and adoptees for whom maternal HIV status is unknown (AIII).

**Rating of Recommendations:** A = Strong; B = Moderate; C = Optional

**Rating of Evidence:** I = One or more randomized trials in children† with clinical outcomes and/or validated endpoints; I\* = One or more randomized trials in adults with clinical outcomes and/or validated laboratory endpoints with accompanying data in children† from one or more well-designed, nonrandomized trials or observational cohort studies with long-term clinical outcomes; II = One or more well-designed, nonrandomized trials or observational cohort studies in children† with long-term outcomes; II\* = One or more well-designed, nonrandomized trials or observational studies in adults with long-term clinical outcomes with accompanying data in children† from one or more similar nonrandomized trials or cohort studies with clinical outcome data; III = Expert opinion

† Studies that include children or children and adolescents, but not studies limited to post-pubertal adolescents

## HIV Testing in Pregnancy

HIV infection should be identified prior to pregnancy (see [Preconception Care in the Perinatal Guidelines](#)) or as early in pregnancy as possible. This provides the best opportunity to prevent infant acquisition of HIV, and to identify and start therapy as soon as possible in infants who acquire HIV. Universal voluntary HIV testing is recommended as the standard of care for all pregnant women in the United States by The Panel on Antiretroviral Therapy and Medical Management of Children Living with HIV (the Panel), the Centers for Disease Control and Prevention (CDC), the American Academy of Pediatrics, the American College of Obstetricians and Gynecologists, and the U.S. Preventive Services Task Force.<sup>1-5</sup> All HIV testing should be performed in a manner consistent with state and local laws (<http://nccc.ucsf.edu/clinical-resources/hiv-aids-resources/state-hiv-testing-laws/>). CDC recommends the “opt-out” approach, which involves notifying pregnant women that HIV testing will be performed as part of routine care unless they choose not to be tested for HIV. The “opt-out” approach during pregnancy is allowed in every jurisdiction. The “opt-in” approach involves obtaining specific consent before testing and has been associated with lower testing rates.<sup>6,7</sup> The mandatory newborn HIV testing approach, adopted by several states, involves testing of newborns for perinatal HIV exposure with or without maternal consent, if prenatal or intrapartum maternal testing is not performed.

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Knowledge of antenatal maternal HIV status enables:

- Women living with HIV to receive appropriate antiretroviral therapy (ART) and prophylaxis against opportunistic infections for their own health.
- **Initiation of treatment in the identified women, which** may also decrease risk of transmission to their partners.<sup>2,8,9</sup>
- Provision of ART to the mother during pregnancy and labor, and antiretroviral (ARV) drug prophylaxis to the newborn to reduce the risk of perinatal transmission of HIV;
- Counseling of women living with HIV about the indications for (and potential benefits of) scheduled elective cesarean delivery to reduce perinatal transmission of HIV;<sup>10-12</sup>
- Counseling of women living with HIV about the risks of HIV transmission through breast milk (breastfeeding is not recommended for women with HIV living in the United States);<sup>13</sup>
- Initiation of prophylaxis against *Pneumocystis jirovecii* pneumonia beginning at age 4 to 6 weeks in all infants with HIV and in those infants exposed to HIV whose HIV status remains indeterminate;<sup>14</sup> and
- Early diagnostic evaluation of infants exposed to HIV, **(see Diagnosis section)** as well as testing of partners and other children, to permit prompt initiation of ART in individuals with HIV.<sup>1,15,16</sup>

Technological improvements have resulted in increased sensitivity to early HIV acquisition and reduced performance time for laboratory-based assays, allowing completion in less than 1 hour. Accordingly, the Panel now incorporates CDC's 2014 HIV Laboratory Testing Recommendations.<sup>17</sup> The guidelines recommend that HIV testing begin with an immunoassay capable of detecting HIV-1 antibodies and HIV-1 p24 antigen (referred to as an antigen/antibody combination immunoassay, **or a fourth-generation HIV antigen/antibody assay**). Individuals with a reactive antigen/antibody combination assay should be tested further with an HIV-1/HIV-2 antibody differentiation assay (supplemental testing). Individuals with a reactive antigen/antibody combination immunoassay and a nonreactive differentiation test should be tested with a Food and Drug Administration-approved HIV nucleic acid test (NAT) to establish diagnosis of acute HIV (see <http://www.cdc.gov/hiv/pdf/hivtestingalgorithmrecommendation-final.pdf#page=11>).

The **antigen/antibody combination** immunoassay is the test of choice and can be done quickly (referred to as expedited), but requires trained laboratory staff and therefore may not be available in some hospitals 24 hours a day. If this test is unavailable, then initial testing should be performed by the most sensitive expedited or rapid test available. Every delivery unit needs to have access to an HIV test that can be done rapidly (i.e., in <1 hour) 24 hours a day. If positive, testing for confirmation of HIV should be done as soon as possible (as with all initial positive assays). Because older tests have lower sensitivity in the context of recent acquisition of HIV, testing following the 2014 CDC algorithm should be considered as soon as feasible if HIV risk cannot be ruled out. Results of maternal HIV testing should be documented in the newborn's medical record and communicated to the newborn's primary care provider.

### ***Repeat HIV Testing in the Third Trimester***

Repeat HIV testing during the third trimester, before 36 weeks' gestation, is recommended **(see Acute HIV in the Perinatal Guidelines)**<sup>18</sup> for women who:

- Are receiving health care in a jurisdiction that has a high incidence of HIV or AIDS in women between ages 15 and 45, or who are receiving health care in facilities in which prenatal screening identifies at least 1 pregnant woman with HIV per 1,000 women screened (a list of areas where such screening is recommended is found in the [2006 CDC recommendations](#); a more up-to-date list is forthcoming);
- Are known to be at high risk of acquiring HIV (e.g., those who are injection drug users or partners of

injection drug users, exchange sex for money or drugs, are sex partners of individuals with HIV, have had a new or more than one sex partner during the current pregnancy, or have been diagnosed with a new sexually transmitted disease during pregnancy); or

- Have signs or symptoms of acute HIV.<sup>2,3,19,20</sup>

Women who decline testing earlier in pregnancy should be offered testing again during the third trimester, using an antigen/antibody **combination** immunoassay, as these tests have a higher sensitivity in the setting of acute **HIV-1**, compared to older antibody tests.<sup>17,21</sup> When acute retroviral HIV is suspected during pregnancy, in the intrapartum period, or while breastfeeding, a plasma HIV RNA test should be obtained in conjunction with an antigen/antibody combination immunoassay (**see the Acute and Recent [Early] HIV Infection section in the Adult and Adolescent Guidelines**).

## **HIV Testing During Labor in Women with Unknown HIV Status**

HIV testing is recommended to screen women in labor whose HIV status is undocumented and to identify HIV exposure in their infants. HIV testing during labor has been found to be feasible, accurate, timely, and useful both in ensuring prompt initiation of intrapartum and neonatal ARV prophylaxis and in reducing perinatal transmission of HIV (see [Intrapartum Care](#) in the [Perinatal Guidelines](#)).<sup>1-4,15</sup>

Policies and procedures must be in place to ensure that staff are prepared to provide patient education and expedited HIV testing, that appropriate ARV drugs are available whenever needed, and that follow-up procedures are in place for women diagnosed with HIV and their infants.

If the antigen/antibody combination immunoassay is not available, initial testing should be performed by the most sensitive expedited test available.

A positive expedited HIV test result must be followed by a supplemental test.<sup>17</sup> Immediate initiation of ARV drug prophylaxis (**including intravenous intrapartum zidovudine**) for prevention of perinatal transmission of HIV is recommended pending the supplemental result after an initial positive expedited HIV test (see [Intrapartum Management](#) in the [Perinatal Guidelines](#)).<sup>1-5,15</sup> No further testing is required for specimens that are nonreactive (negative) on the initial immunoassay.<sup>17</sup>

## **HIV Testing During the Postnatal Period**

Women who have not been tested for HIV before or during labor should be offered expedited testing during the immediate postpartum period; **if mothers are unavailable for testing**, their newborns should undergo expedited HIV testing.<sup>1,3,15</sup> Maternal testing should be done using **the combination** antigen/antibody immunoassay to screen for established and acute HIV-1; results should be obtained in <1 hour. If acute HIV-1 is a possibility, then a plasma HIV NAT test should be sent as well. Use of expedited HIV assays for prompt identification of infants exposed to HIV is essential because neonatal ARV prophylaxis should be initiated as soon as possible after birth—ideally no more than 6 hours after birth—to be effective for the prevention of perinatal transmission. When an initial HIV test is positive in mother or infant, initiation of infant ARV drug prophylaxis and counseling against initiation of breastfeeding is strongly recommended pending results of supplemental HIV tests to confirm and/or differentiate between HIV-1 and HIV-2 (see [ARV Management of Newborns with Perinatal HIV Exposure](#)). If supplemental tests are negative and acute HIV is excluded, infant ARV drug prophylaxis can be discontinued. In the absence of ongoing maternal HIV exposure, breastfeeding can be initiated. Mechanisms should be developed to facilitate HIV screening for infants who have been abandoned and are in the custody of the state.

### ***Infant HIV Testing when Maternal HIV Test Results are Unavailable***

When maternal HIV test results are unavailable (e.g., for infants and children who are in foster care) or their accuracy cannot be evaluated (e.g., for infants and children adopted from a country where results are not

reported in English), HIV testing is indicated to identify HIV in those infants or **children**.<sup>1</sup> The choice of test will vary based on the age of the child (see [Diagnosis of HIV Infection in Infants and Children](#)).

## ***Acute Maternal HIV Infection During Pregnancy or Breastfeeding***

The risk of perinatal transmission of HIV is increased in infants born to women who have acute HIV during pregnancy or lactation.<sup>18,22-25</sup> The antigen/antibody **combination** immunoassay will detect acute infection more readily than other immunoassays. If acute HIV is suspected, a plasma HIV RNA test should be sent as well. Women with possible acute HIV who are breastfeeding should cease breastfeeding immediately until HIV is confirmed or excluded.<sup>13</sup> Pumping and temporarily discarding breast milk can be recommended and (if HIV infection is excluded), in the absence of ongoing maternal exposure to HIV, breastfeeding can resume. Care of pregnant or breastfeeding women identified with acute or early HIV, and their infants, should follow the recommendations in the [Perinatal Guidelines](#).

## **Other Issues**

Clinicians should be aware of public health surveillance systems and regulations that may exist in their jurisdictions for reporting infants exposed to HIV; this is in addition to mandatory reporting of persons with HIV, including infants. Reporting cases allows for appropriate public health functions to be accomplished.

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